

December 14, 2000

MEMORANDUM TO: Cynthia A. Carpenter, Chief
Generic Issues, Environmental, Financial
and Rulemaking Branch
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

FROM: Peter C. Wen, Project Manager */RA/ Signed by P. Wen*
Generic Issues, Environmental, Financial
and Rulemaking Branch
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

SUBJECT: SUMMARY OF DECEMBER 6, 2000, MEETING WITH THE NUCLEAR
ENERGY INSTITUTE AND ELECTRIC POWER RESEARCH
INSTITUTE REGARDING HIGH BURNUP FUEL ISSUES

On December 6, 2000, a public meeting was held at the Nuclear Regulatory Commission (NRC) offices in Rockville, Maryland. The participants included members of the NRC staff and representatives from the Nuclear Energy Institute (NEI), the Electric Power Research Institute (EPRI), fuel vendors, and licensees. Attachment 1 lists attendees at the meeting, and Attachment 2 contains the meeting agenda.

This meeting was held to continue discussion of the evaluation process, developed by Working Group 2 of the Robust Fuel Program regarding the extension of fuel burnup limits beyond 62 Gwd/tU. The staff has interacted with industry on this subject during the past year. On March 30, 2000, industry representatives briefed the staff on industry's high-burn fuel program and discussed their draft document entitled "Process for Establishment of Licensing Criteria for Fuel Burnup Extensions Beyond 62 Gwd/tU." The staff had provided comments on that document May 2, 2000. After addressing the staff's comments, NEI submitted a document entitled, "Licensing Criteria for Fuel Burnup Extensions Beyond 62 Gwd/tU-Industry Guide, Revision 5," for NRC review on October 10, 2000. This document can be found in ADAMS under accession number ML003760615.

Following opening remarks by Mr. Jared Wermiel of the Office of Nuclear Reactor Regulation, Mr. Terry Rieck, Chairman of Robust Fuel Program Working Group 2, discussed how Revision 5 of the industry guide addressed NRC's comments. He also provided a schedule for the release of future industry guides. He estimated that Revision 6 will be released in February and the final draft document will be available in September 2001. His presentation materials are provided as Attachment 3.

Mr. Nicolas Waeckel of EPRI, discussed industry's proposal for reactivity initiated accident criteria. The industry is proposing to use two separate limits, one for fuel clad failure and one for coolability; both of which are a function of fuel burnup. These limits are given in terms of enthalpy increase and will be based on integral test results, separate effect tests, and analytical evaluations. One issue was raised regarding the treatment of spallation for those plants that continue operate with fuel containing spalled rods. The industry indicated that this issue can be addressed in the methodology and will be included in the future revision document. His presentation materials are provided as Attachment 4.

Mr. Gregg Swindlehurst of Duke Power Company, presented the status of the industry collective effort in developing 3D neutron kinetics analysis methodology for hot zero power rod ejection accident (REA). He described the approach to develop the standardized methodology, including review existing licensed REA analysis methodologies and Regulatory Guides, probability-based method for determining initial core conditions, treatment of the xenon impact, the key physics parameters considered in the methodology, and methods to address uncertainties in the key physics parameters and the model. He indicated that the demonstration analyses using the proposed guideline are in progress and that EPRI is planning to submit a report for NRC review. His presentation materials are provided as Attachment 5.

Finally, Mr. Robert Montgomery of ANATECH, discussed the four-stage review process and the status of review and assessment. He also went over a new example (Overheating of Fuel Pellets) to demonstrate the review process. His presentation materials are provided as Attachment 6.

The staff expressed its general agreement with the industry approach and commended industry's progress in the development of an industry guide in licensing criteria for fuel rods at burnup extension beyond 62 Gwd/tU. Continued interaction between NEI and the staff on this program is anticipated.

Attachments: As stated
cc w/attns: See next page

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Package Accession No.: ML003777519
Memo & Attachments 1-2: ML003777522
Attachments 3-6: ML003775132
Template NRC-001

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DISTRIBUTION: MTG. SUMMARY w/NEI &EPRI Re High Burnup Fuel Dated 12/14/00

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RMeyer, RES

Sud Basu, RES

M Satorius, OEDO

J Shea, OEDO

OPA

**NRC/NEI HIGH BURNUP FUEL MEETING
LIST OF ATTENDEES
December 6, 2000**

<u>NAME</u>	<u>ORGANIZATION</u>
Jared Wermiel	NRR/DSSA/SRXB
Ralph Caruso	NRR/DSSA/SRXB
Muffet Chatterton	NRR/DSSA/SRXB
Shih-Liang Wu	NRR/DSSA/SRXB
Tony Attard	NRR/DSSA/SRXB
Farouk Eltawila	RES/DSARE/SMSAB
Ralph Meyer	RES/DSARE/SMSAB
Harold Scott	RES/DSARE/SMSAB
Sud Basu	RES/DSARE/SMSAB
Peter Wen	NRR/DRIP/RGEB
Carl Beyer	PNNL
Terrance Rieck	Exelon
Nicolas Waeckel	EPRI
Robert Montgomery	EPRI/Anatech
Rosa Yang	EPRI
John Butler	NEI
Gregg Swindlehurst	Duke Power
Glen Watford	GNF-A
Sumit Ray	Westinghouse
Daniel Risher	Westinghouse
Ian Rickard	Westinghouse
Joe Mihalejk	Constellation Energy
Bert Dumn	Framatome Tech
Adel Alapour	Siuthern Nuclear
Jerry Holm	SPC
Whee Choe	TXU
Al Strasser	Aguarius Services
Autovio Dias	URA
Larry Phillips	Self
Sidney Crawford	Self

AGENDA FOR NRC-INDUSTRY
MEETING ON HIGH BURNUP FUEL ISSUES

December 6, 2000; 8:30 a.m. - 12:00 noon
Room O-10B4

8:30	Introductions and Opening Remarks	Wermiel, NRC
8:40	How Industry Guide (Rev 5) Addresses NRC Comments	Rieck, Exelon
8:55	Reactivity Initiated Accident Criteria	Waeckel, EPRI
10:00	Break	
10:10	Rod Ejection Accident 3D Neutronics Methodology	Swindlehurst, Duke
10:55	Additional Design Criteria	Montgomery, Anatech
11:25	Future Plans	Rieck, Exelon
11:50	Discussion	All
12:00	Adjourn	